S
351.8232
U24wqL
1989

Water Quality and Land Use Planning in the Flathead Basin

STATE DOCUMENTS COLLECTION

JUL 18 1989

MONTANA STATE LIBRARY
1515 E. 6th AVE.
HELENA, MONTANA 59620

PLEASE RETURN

Published for the Flathead Basin Commission
by the Freshwater Foundation

Funding for this brochure was provided by a grant from the Northwest Area Foundation.

The Freshwater Foundation is a non-profit organization which encourages proper use and management of our water resources to keep them usable for human consumption, industry and recreation. The Foundation supports scientific research into the problems confronting freshwater supplies and works to increase public awareness of freshwater issues.

Freshwater Foundation
2500 Shadywood Road, Box 90
Navarre, MN 55392
(612) 471-8407

Copyright © 1989 by the Freshwater Foundation and the Flathead Basin Commission.

Cover photo courtesy of Paul Fugleberg.

Old West—New West

Montana—the wild West, the last frontier, home of the rugged individualist; it excites the imagination. Historically, Montana has enjoyed a freewheeling kind of growth based on the concepts that resources were inexhaustible, land was unlimited and landowners had the right to do whatever they wanted to do on their own land. Today, the impacts of these old attitudes are beginning to show in the Flathead Basin. Fertile soils and virgin forests are being depleted and the air and water are not as clean as they once were.

Nothing is static. The rugged individualist in today's complex society is the person who knows that changes will be for either better or worse, depending on his or her willingness to participate in, and support, efforts that encourage planned development.

What Is a Watershed? A Basin?

On the land, water that does not evaporate or soak into the soil usually drains into ditches, streams, marshes or lakes. An area from which all water drains to a given point is called a watershed. A watershed can be as small as a corner of your yard that drains into a puddle or as large as the area that drains into the Mississippi River.

The area of Montana from which all water eventually drains into Flathead Lake and the lower Flathead River is the Flathead Basin. The Flathead Basin is a six-million-acre watershed. Within it are several smaller, interrelated watersheds. What happens in one of these watersheds eventually affects the entire Flathead Basin.

How Does the Way We Use Land Affect Water Quality?

Our natural resources, especially water, are affected and sometimes permanently changed by our activities.

In 1983, the Flathead River Basin Environmental Impact Study made recommendations based on a five-year analysis of population growth, economic development, government, climate, recreation patterns, and fish and wildlife characteristics. The study showed that water quality in the Flathead Basin depends on how we manage surrounding lands.

Timber harvest, agriculture, mining, wastewater treatment, shoreline activities and residential development are some of the land disturbances that can potentially alter physical, chemical and biological processes in Flathead waters. Fish populations and water quality, two of the Flathead area's most valued resources, are threatened by these changes.

Human activities in a watershed contribute to two general sources of water pollution: point-source pollution and nonpoint source pollution.

Point source pollution *usually comes from a single identifiable source such as the end of a pipe. Discharges of wastewater from industrial and commercial operations and from domestic and municipal sewage treatment systems are examples of point-source pollution.*

Industrial wastewater can contain toxic chemicals, nutrients and other pollutants. Progress is being made in controlling this source by regulating industrial emissions and effluent.

Inadequate municipal and on-site sewage treatment systems can also cause water quality problems. In the Flathead Basin, the five sewage treatment facilities that discharge into Flathead Lake or its tributaries are upgrading their treatment processes to remove phosphorus from their treated effluent. Centralized sewage systems are being developed for some areas of concentrated housing.

Non-point source pollution *occurs when the natural forces of wind and water combine with human activities in a watershed to contribute to water pollution. For example, runoff from land-clearing and road-building sites often contains pollutants that are not from a distinct, identified source.*

Nutrients—food for plants and animals—enter a lake or stream through the water that flows into it from the surrounding land surface. Thus, any land use that affects the nutrient content of surface runoff in a watershed affects the condition of our waters.

Too much nutrient means too much plant growth. The Flathead Lake Biological Station has established that phosphorus and nitrogen are the nutrients responsible for increased algal growth in area lakes. About 100 tons of biologically available phosphorus enter Flathead Lake each year. Increased plant productivity from even small additions of nutrients to the lakes could result in eventual replacement of trout, kokanee and other desirable species by rough fish.

Our natural resources, especially water, are affected and sometimes permanently changed by our activities.

What Land Use Activities Can Degrade Water Quality in the Flathead Basin?

Many activities can contribute to the decline of water quality in the Flathead Basin:

Shoreline Development—It seems that everyone wants to live on or near a lake or river, but shoreland development brings water quality problems with it. Construction exposes the land to erosion. Natural vegetation is often removed and lawns are sprayed with pesticides and fertilizers that find their way into surface waters. To crowd more people around the shoreline, lots are sometimes sized too small to provide for adequate septic systems. Homeowners do not always recognize the need to alter their lifestyles to fit the limitations of their systems.

Septic Systems—In the Flathead Basin, approximately half of the residents rely on septic systems (septic tanks and drainfields) to treat household and commercial wastewater. When unplanned residential development grows faster than the community is able to provide waste treatment services, too many septic systems can be concentrated in too small an area, creating problems where soils are not capable of providing proper treatment. Seepage from these systems can contaminate groundwater and drinking water wells with bacteria, nitrates and other pollutants. When located near lakes and streams, these systems can add large quantities of nutrients to the water. As septic systems age, even properly sited and maintained drainfields will eventually fail.

Urban Runoff—When precipitation falls in areas of dense population it picks up pollutants from the air. It also picks up chemicals, oil, metals, highway de-icing salts, paper and other debris from streets, parking areas and sidewalks. These areas have large expanses of paved surfaces that increase the amount of runoff because they do not absorb water. Urban runoff can contain organic materials, inorganic solids, bacteria, nutrients, pesticides and heavy metals.

Agriculture—The production of food and fiber has the potential to harm water quality. Intensive farm management practices, overgrazing of range and pasture land, and irrigation can all contribute to sediment and nutrients in runoff. Grazing can compact and damage streambanks, increasing erosion and sedimentation problems. Improper storage and handling of manure and agricultural chemicals such as pesticides and nitrogen fertilizers can contaminate wells and groundwater as well as surface water. Allowing livestock direct access to streams and ponds pollutes the water and may alter the streambank. Straightening or channelizing streams to promote drainage can seriously damage aquatic habitats.

Pesticides—These chemicals are used on farmlands, forests, lakes, drainage canals, lawns, roadsides, and in storage buildings and homes. Pesticides control disease, increase agricultural productivity, kill the weeds in our lawns and control mosquitoes and other pests. They can also contaminate both groundwater and surface waters, where their effects range from subtle changes in the ecosystem to significant impacts on plants and animals, including humans, who drink the water or live in or near it.

Construction—Both general construction and road construction disturb natural groundcover, increasing erosion and sedimentation, and create paved surfaces that alter natural runoff characteristics. Of all water pollutants, sediment is the one present in the highest volume, and construction has higher sediment-loading rates per acre than any other activity. Sediments, mostly particles of soil, discolor and fill streambeds and lakes. Other materials—nutrients and harmful chemicals—attach to the sediment and are then released into the water.

Any land use that affects the nutrient content of surface runoff in a watershed affects the condition of the lake.

Residual Wastes—Solid, liquid and sludge substances remain after the collection and treatment of waste materials. These residuals include industrial wastes, substances remaining after combustion and air pollution control, water and wastewater treatment sludge, municipal refuse, mining wastes, feedlot wastes and dredge spoils. Some of this waste contains hazardous materials which must be properly handled and stored so as not to contaminate ground and surface waters.

Forestry—Nearly one-third of the six-million-acre Flathead watershed is used for commercial forest production. Site disturbances such as road building and logging may increase the amount of erosion, alter the pattern of surface runoff and increase the amount of phosphorus-containing sediment in the watershed. U.S. Forest Service lands cover 41 percent of the Flathead Basin, and the state of Montana has three state forests in the area. The Confederated Salish and Kootenai Tribes manage their own timber land. Several lumber companies also have significant forest holdings in the Basin.

Coordinated by the Flathead Basin Commission, studies are presently being conducted by several federal and state agencies, the University of Montana and private industries. These studies will monitor and evaluate the effects of logging practices on water quality and fisheries in the Flathead Basin.

Many activities can contribute to the decline of water quality in the Flathead Basin.

What Is Land Use Planning?

In shaping our lives we shape our environment. As communities grow they need to develop plans that will lead to future economic and social stability. Communities also need people who are willing to help with the planning process. Land use planning is simply an effort to encourage population growth and economic development in a way that will preserve and make wise use of our limited supply of natural resources.

Land use planning is:

- *People making decisions about the future of their communities and environment.*

- *People encouraging orderly development and discouraging helter-skelter growth that could destroy forever a community's option to make choices.*

- *People assuring that land and other resources will be used for the purposes to which they are best suited and by which their fullest potential will be realized.*

- *People protecting resources from exploitation for the benefit of a few and from degradation caused by excessive or inappropriate use.*

Land use planning is simply an effort to encourage population growth and economic development in a way that will preserve and make wise use of our limited supply of natural resources.

Why Is There a Need for Planned Development in the Flathead Basin?

The land and other natural resources of the Flathead Basin are its most valuable economic assets. Wise use of these assets is essential for continued, sound economic growth.

Lakes do not have unlimited capacity to accept the changes brought on by human activity. At some point a lake's ecology will reach a limit beyond which water quality, fish and plant populations and aesthetic value will be degraded. Algal blooms, weed-choked lakes and diminished fisheries are often the first signs of more trouble to come. All of these signs are already in the Flathead Basin.

Planned development in a watershed is an effective way to avoid water quality problems in lakes and streams as well as in the groundwater. It actually allows for greater flexibility in arranging residential, commercial and recreational areas in such a way that water and waste treatment systems can be planned more economically and efficiently and that sensitive environmental resources such as wetlands, shorelands, groundwater recharge zones and unique aquatic habitat can be protected.

Planned development assures economic prosperity by providing and enhancing opportunities for tourism, resource extraction and processing, agriculture and recreational needs. An environment of high social, economic and natural quality is the ultimate goal of planned development.

What Elements Are Necessary for Developing a Comprehensive Master Plan for Economic Development and Resource Protection?

To be effective over the long term, land use planning must take into account not only the physical features and human activities in a watershed, but also the way people perceive the environment, their relation to it and their responsibility to protect it.

Though the approach to creating a master plan may differ from one planning group to another, some basic elements are common to most planning efforts:

- Analysis of the physical environment, including any changes which have occurred, or may be expected to occur.
- Information about existing and future land use and its effect on natural resources.
- Information about surface water and groundwater, including accurate hydrologic and water quality data as well as distribution, availability and use figures—both present and potential.
- Recognition of conflicting interests and priorities among different individuals, groups and government units in the area and development of a plan for mediating these differences and coordinating various interests.
- Definition of goals and objectives for future development and use of resources.

How Do Goals and Objectives Become Accomplishments?

Implementing a comprehensive plan by turning goals and objectives into desired results is the difficult, and sometimes controversial, "action" part of land use planning.

One kind of action is adoption of regulations that provide environmental protection, as in the case of discharge permits for point source pollution. Similarly, zoning controls and lakeshore and subdivision regulations protect surface waters from uncontrolled shoreline development in sensitive areas and from other activities which may threaten water quality.

Less restrictive measures include public acquisition of sensitive lands, conservation easements and standardized practices in construction, agriculture and forestry.

Diverse efforts are needed to implement wise land use planning. These measures must be based on a comprehensive master plan to which all interested and affected persons have had the opportunity to contribute.

Planned development allows for greater flexibility in arranging residential, commercial and recreational areas.

What is the History of Planning in the Flathead Basin?

Local units of government in the Flathead Basin are engaged in planning for both long and short-range environmental protection, economic development and land use. In today's society, planning is usually a joint effort between professional planners who supply information and advice, private citizens who communicate their ideas, needs and priorities, and elected officials who adopt, implement and enforce the plan.

The county commissioners of Lake and Flathead counties have approved overall economic development plans and comprehensive general plans. To achieve the goals set by the general plans, both counties are now working on more detailed neighborhood plans and zoning for specific areas. The Confederated Salish and Kootenai Tribes are preparing a comprehensive master development plan that will address how land uses will affect natural resources, local economies, cultural values and other factors.

Though counties and cities within the Flathead Basin employ professional planners who provide technical information related to land use decisions, these local governments rely on planning boards to help guide land use planning. These boards, whose members are local citizen volunteers, are responsible for making recommendations to county commissioners and city officials on matters that affect the entire community.

In shaping our lives we shape our environment. As communities grow they need to develop plans that will lead to future economic and social stability.

How Can You Participate in Land Use Planning?

People, we are constantly reminded, are destroying our natural resources. . . polluting the air. . . contaminating the water. . . exposing the soil to erosion. . . exploiting non-renewable resources. We hear a lot about what we are doing wrong. Land use planning is your opportunity to participate in the effort to do something right.

There are many ways to get involved. Lake associations, chambers of commerce and community service organizations are some of the groups that invite your participation. Contact your elected officials. Attend public meetings and hearings and be willing to serve on planning boards and accept appointments to planning committees. Whatever your interests and whatever investment of time and effort you can make, you and your ideas are needed. Experience isn't necessary; caring about the future of the Flathead Basin and its water resources is essential.

For more information about land use planning in the Flathead Basin and how you can help, please contact:

Flathead Basin Commission
723 Fifth Avenue East
Kalispell, MT 59901
406/752-0081

Flathead Regional Development Office
723 Fifth Avenue East
Kalispell, MT 59901
406/752-5300

Land Services Department
Lake County Courthouse
Polson, MT, 59860
406/883-6211

Confederated Salish and Kootenai Tribes
Tribal Land Office
P.O. Box 278
Pablo, MT 59855
406/675-2700

The Flathead Basin Commission

The Flathead Basin Commission was established by the 1983 Montana Legislature to protect the quality of Flathead Lake's aquatic environment, waters that flow into or out of the lake, and other natural resources of the Basin.

The Commission is made up of representatives of federal, state, local and Canadian agencies, as well as tribal, private and citizen interests. The Commission is charged with the following tasks:

- Monitoring the Basin's natural resources;
- Encouraging cooperation among Basin land managers;
- Holding public hearings on the condition of the Basin;
- Supporting economic development without compromising the Basin's aquatic system;
- Promoting cooperation between Montana and British Columbia on resource development in the Flathead Basin;
- Making recommendations to the Legislature regarding the preservation of the Basin's aquatic resources.

Brochure developed by:

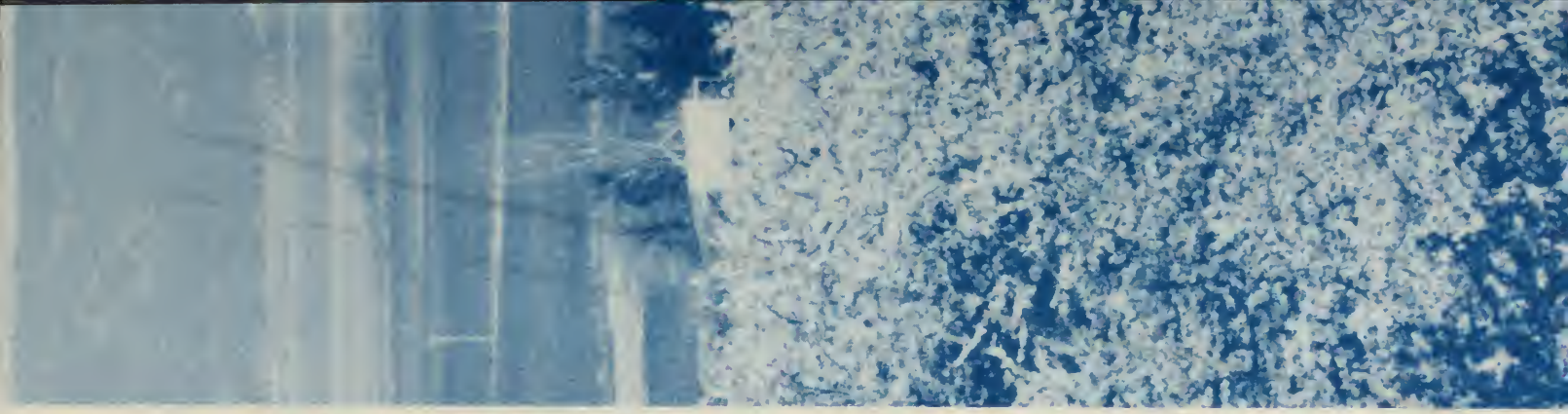
Stephen Herbaly
Flathead Regional Development Office

Craig Hess
Flathead Basin Commission

Muriel Morrisette
Freshwater Foundation

Jerald Sorensen
Lake County Land Services Department

Whatever your interests and whatever investment of time and effort you can make, you and your ideas are needed.



Flathead Basin Commission
723 Fifth Avenue East
Kalispell, MT 59901

Librarian
Montana State Library
1515 E. Sixth Ave.
Helena, MT 59620